



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/932,053	08/18/2001	Chi Chuan Wu	56386	5051

7590 03/12/2003
PETER F. CORLESS
EDWARD & ANGELL, LLP
101 FEDERAL STREET
BOSTON, MA 02110

EXAMINER

LEE, HSIEN MING

ART UNIT PAPER NUMBER

2823

DATE MAILED: 03/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/932,053

Applicant(s)

WU ET AL.

Examiner

Hsien-Ming Lee

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 December 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 12/3/02 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Art Unit: 2823

DETAILED ACTION

Remarks

1. The objection to drawing and 112-second-paragraph rejection to claims 5 and 15 are withdrawn in response to applicants' amendment filed 12/13/02.
2. Claims 1-20 are pending in the application.

Grounds of Rejection

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-5, 7, 10-15, 17 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marrs et al.(US 5,355,283) in view of Richman (US 5,249,354).

Marrs et al. teach the claimed method and semiconductor package, comprising:

- providing a substrate 602 having a device-mounting region, i.e. the region for passive devices (col. 2, lines 66-67), predefined with a chip-mounting region on a surface of the substrate (Fig.6), and a wire bonding region, i.e. the region where traces 605 are located, predefined around the device-mounting region;
- mounting a plurality of passive devices on the device-mounting region (col. 2, lines 66-67);

Art Unit: 2823

- using an insulative material 609 for encapsulating the passive devices (col. 3, lines 20-21; col. 8, lines 27-35), wherein the insulative material may be thermosetting or thermoplastic (col.7, lines 26-30);
- disposing a semiconductor chip 601 on a surface of the insulative material above the passive devices, wherein the chip 601 has an active surface (a top surface) and an inactive surface (a bottom surface) (Fig.6);
- providing a plurality of bonding wires 606 for electrically connecting the semiconductor chip 601 to the traces 605 (Fig.6);
- forming an encapsulant 603 for encapsulating the semiconductor chip 601 and the bonding wires 606 (Fig.6); and
- providing a plurality of conductive members 604 for electrically connecting the substrate 602 to an external device (Fig.6).

Marrs et al. do not teach utilizing the bonding wires 606 for electrically connecting the semiconductor chip 601 to the bonding fingers of the substrate.

However, Richman in an analogous art of making a semiconductor package teaches making the package 20 (Fig.2) containing a chip 25 and/or other passive components (see abstract); providing a plurality of bonding wires 23 for electrically connecting the chip 25 to bonding fingers 21; and forming an encapsulant 24 for encapsulating the chip 25 and the bonding wire 23.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to connect the chip of Marrs et al. to the bonding finger as taught by

Art Unit: 2823

Richman since by this manner it would provide a physical support during the fabrication of the package (col. 3, lines 50-61).

5. Claims 6, 8, 9, 16, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marrs and Richman as applied to claims 1, 7, 11 and 17 above and further in view of Falcone et al. (US 6,022,583).

Marrs in view of Richman fails to teach encapsulating the passive devices through a dispensing process. However, utilizing the dispensing process for encapsulation in packaging applications is a well-known technique, as evidenced by Falcone et al. (col. 2, lines 14-30).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the dispensing process of Falcone et al. in the packing method of Marrs in view of Richman for encapsulating the top surface and periphery of the passive devices and attaching the inactive surface (the bottom surface) of the chip directly to the surface of the insulative material above the passive devices before the insulative material is cured since by this manner it would form a good encapsulation to enclose the packaging without the formation of voids.

Response to Arguments

6. Applicants' arguments filed 12/13/02 have been fully considered but found not persuasive for reasons as follow.

Applicants' argument is on the ground that Marrs et al. fail to teach or suggest disposing a semiconductor chip above the passive components. (fourth paragraph, page 4)

Contrary to the argument, Marrs et al. in col.2, lines 66-67 clearly indicate that passive components, such as resistors and capacitors, can also be mounted on the substrate. In other

Art Unit: 2823

words, Marrs et al. teach that the passive components are located above the substrate 602 and under the semiconductor chip 601 as shown in Fig. 6.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this case, Richman reference is used to remedy the deficiency of Marrs et al. for providing a physical support during the fabrication of the package, as stated above. In addition, Falcone is further cited to remedy the deficiency of Marrs et al. in view of Richman for the purpose of forming a good encapsulation to enclose the packaging, as stated above.

For reasons above, the rejection as set forth in the previous Office action is deemed proper.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,


Art Unit: 2823


however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hsien-Ming Lee whose telephone number is 703-305-7341. The examiner can normally be reached on M-F (9:00 ~ 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-0142 for regular communications and 703-305-0142 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


Hsien Ming Lee
March 4, 2003


Olik Chaudhuri
Supervisory Patent Examiner
Technology Center 2800